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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,780	12/22/2000	Eric Bernier	S1022/8484	4414

7590

03/27/2003

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EXAMINER

DEMAKIS, JAMES A

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/747,780

Applicant(s)

BERNIER ET AL.

Examiner

James A Demakis

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Please correct the following: Sheet 2, line 22, ohms/square- this is unclear as written, it would appear that there are unit values missing, such as "per square cm" or this needs definition as some unit of measure; sheet 2, line 31, change "dipole" to "diode"; sheet 4, line 15, change 21 to 22; sheet 4, line 19 and 28, change "volume" to voltage; sheet 5, change "ohms/square" as above, 4 places; Sheet 6, line 4, change "squares", same as above, this unit of area needs definition.

Appropriate correction is required.

Claim Objections

2. Claims 2 and 3 are objected to because of the following informalities: Claim 2: "ohms/square" requires additional definition, see above statements. The Examiner will assume conventional resistivity values to facilitate further examination. Claim 3: "volume" is assumed to be "voltage" by the Examiner to facilitate further examination, see comments above.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1, 2, 3, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rault (USPN 5,751,531) in view of Ishii et al (USPN 4,405,932) and Williams et al (USPN 5,374,843).

Art Unit: 2836

Regarding Claims 1-3,5:

Rault discloses the use of Avalanche devices such as Zeners Z1, Figure 1, as clipping devices capable of voltages of 500-1000 volts and currents of 0.5 – 40 amps. Col. 1, lines 40-48 and Col.3, lines 37-50.

Rault does not discuss a transistor operating as a diode with open base and grounded collector.

Ishii et al discloses an NPN transistor with grounded collector and open base and discusses the collector-emitter breakdown voltage with the open base resulting in a negative resistance characteristic, Col.5, lines 29-48. Additionally, Figure 12 shows a p-type base region enclosing an n-type emitter, Col. 8, lines 12-28. Ishii et al does not discuss a vertical transistor.

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified Rault by Ishii et al to use a transistor in this configuration as a diode because this is how diode junctions are formed.

Williams et al discloses the use of thicker epitaxial layers for providing a vertical NPN transistor, Col.3, lines 39-45; for higher voltage operation, 1000 volts, higher resistivities of up to several hundred ohms-cm can be used, Col.6, lines 5-10.

It would have been obvious to one having ordinary skill in the art at time of the invention to have modified Rault by Williams et al to increased the epitaxial layers in thickness because this is how higher breakdown voltages are obtained.

Art Unit: 2836

Allowable Subject Matter

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Demakis whose telephone number is 703.305.7938. The examiner can normally be reached on 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 703.308.3119. The fax phone numbers for the organization where this application or proceeding is assigned are 703.308.7721 for regular communications and 703.308.7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0956.

James A. Demakis
February 28, 2003



BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 4000